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C-131 and Alternative Operational Support Aircraft

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National Security and International
Affairs Division

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March 31, 1986

The Honorable Barry Goldwater
Chairman, Committee on Armed Services
United States Senate

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

This report responds to a provision in the Conference Committee Report on the Department of Defense (DOD) Authorization Bill for fiscal year 1986. The provision directs the General Accounting Office to conduct a study to determine the feasibility and cost effectiveness of proposed modifications to Air National Guard C-131 aircraft. Subsequently, the Chairman, Senate Committee on Armed Services, asked us to evaluate (1) the status and condition of the C-131 aircraft, (2) the mission needs and operational requirements of both the Air National Guard and the Air Force with respect to the C-131, and (3) the cost effectiveness of re-engining and modifying the C-131 aircraft as compared with other proposed alternatives.

We found that the modification and re-engining of the Guard's C-131s are feasible and would address most of the aircraft's operational, support, and safety problems. However, the cost effectiveness of modifying the C-131s or selecting a replacement aircraft is dependent on mission needs and operational requirements—neither of which has been adequately defined. As a result, the DOD study addressing cost of various mixes for operational support aircraft does not provide an adequate basis for determining cost effectiveness of the C-131 in relation to proposed replacement aircraft.

Although the Congress appropriated funds to modify three C-131s as a test program, the Air Force continues to phase out the C-131s. Unless the Air Force plan to phase out the C-131s is revised, the modification of three C-131s as a test program does not appear to be warranted.

Details on our work are presented below. Our objectives, scope, and methodology are in appendix I.

Introduction

The Air National Guard, a combat ready force available for mobilization to support Air Force requirements, uses C-131s as an operational support aircraft. Because C-131 aircraft are about 30 years of age and reportedly becoming unreliable and difficult to support, the Congress appropriated $8 million for fiscal year 1985 to re-engine and modify two C-131 aircraft. The Senate Appropriations Committee Report on the 1985 DOD Appropriations bill required a cost-effectiveness analysis by the Office of the Secretary of Defense. The retrofit of two C-131 aircraft with turboprop engines, new weather radar, and improved avionics was to determine cost effectiveness and operational benefits as compared to replacement aircraft. The Allison Gas Turbine Division of General Motors proposed to use their engines and submitted a cost estimate of $4 million per aircraft for re-engining and modifications.

Information on the C-131 and the aircraft being considered as replacements—the C-130A, C-12F, and C-12J—is in appendix II. In general, the C-130A is larger than the C-131 and the C-12F and C-12J are much smaller.

In a letter dated April 3, 1985, to the Chairman of the Senate Appropriations Committee, the Assistant Secretary of Defense for Reserve Affairs stated that the DOD cost study had been completed. The letter further stated that the most cost-effective solution to meeting the Guard's requirements would be to phase out and replace C-131s by the end of fiscal year 1988.

For fiscal year 1986, the Congress appropriated $12 million to modify three C-131 aircraft. The Conference Report recommended an authorization for fiscal year 1986 of $12 million. This amount would have been in addition to the fiscal year 1985 appropriation for $8 million. However, because the Air Force had not begun modifying the first two aircraft and none of the $8 million had been obligated, appropriated funds subsequently were limited to the $12 million for fiscal year 1986.

Status and Condition of C-131 Aircraft

As of September 1985, Guard units had 32 C-131 aircraft. Between September and December 1985, six were sent to storage or air museums and replaced with six C-12F aircraft. The remaining 26 aircraft are about 30 years old. Despite their age, the aircraft have accumulated relatively low operating time (about 9,000 to 18,000 flying hours) when compared to commercial versions of the C-131—reported to be up to 75,000 flying hours.

Guard commanders, in response to our inquiry, reported the basic airframes of their C-131s to be in good condition and without any major structural defects. Guard units did report excessive maintenance problems with the current engines on the C-131 and some problems with the electrical systems, avionics, and instrumentation. Some units reported problems obtaining replacement parts, particularly engine and electrical parts. Units also reported the engine performance has been degraded by the necessity to use lower octane aviation gasoline than the engine was designed to use. In addition, unavailability of this lower octane gasoline at some bases has reportedly caused flight routing difficulties. These factors have diminished the aircraft's ability to adequately carry out Guard mission requirements.

Prior to April 1980, C-131 aircraft were sent through a major inspection called an Analytical Condition Inspection every 3 to 7 years. Records indicate that the last such inspection for the 26 C-131 aircraft was between October 1977 and April 1980. The inspections were stopped in April 1980 primarily for economy reasons because no serious defects were being discovered. Commanding officers of 13 of the 26 units with C-131 aircraft told us that their aircraft should go through a major inspection before any final decision on modifying the aircraft. They were concerned about the airframe's structural integrity, aircraft age, time since last major inspection, possible corrosion, and reliability of aircraft systems.

Comments by other officials involved with the C-131 follow:

- Officials at the corporation which did the last major inspection and continues to perform major maintenance work commented that the Guard's C-131 aircraft have been well maintained.
- San Antonio Air Logistics Center officials, assigned primary Air Force engineering responsibility for the C-131 aircraft, said their recent involvement with the aircraft was limited due, in part, to the discontinuance of the inspection program. A Center official said C-131 aircraft should be given a major inspection before re-engining and modification.
- An official of the company that manufactured the C-131 said that some of the commercial version of the aircraft have accumulated as much as 75,000 flying hours and 135,000 take-off and landing cycles. His opinion was that the C-131 aircraft could continue to be used for an extended time.

Mission Needs and Operational Requirements

Mission needs and operational requirements for support aircraft have not been specified either by the Air Force or the Guard. Furthermore, a wartime requirement for the Guard C-131 aircraft has not been defined or documented.

The C-131 aircraft are assigned to a specific Guard unit within a state. According to Guard officials, the state determines the aircraft's use, although aircraft are used primarily to transport personnel and small cargo. The Air Force criterion for assigning support aircraft to states appears to be to support tactical fighter units. However, 2 of the 34 states with tactical fighter units do not have support aircraft assigned.

All Guard units (including those with C-131s) can request support through the National Guard Air Operations Center. The Center manages the activities of all Guard units, which have over 152 C-130s. A Guard unit can request a C-130 for mission support through the Center. According to a Center official, the availability of aircraft is not guaranteed. In fiscal years 1984 and 1985, the Center, after rankings based on a priority system, fulfilled about 50 percent of the requests with available assets.

The 26 Guard units with assigned C-131s as of January 1986 provided us information on how the aircraft were used in fiscal years 1984 and 1985. In general, the information was insufficient in both completeness and validity to identify the number of passengers and the amount of cargo carried, data essential in determining the size, type, and capacity of support aircraft. The amount of information varied from unit to unit primarily because there is no requirement to retain data on passenger or cargo loads beyond 30 days. The information on usage over the last two fiscal years was obtained from official records, informal records, and recollections of Guard personnel.

The Guard's C-131 flying hours ranged from 179 hours to 452 hours per aircraft for fiscal year 1985 (see app. III). According to Guard officials, the number of flying hours depends on how each state utilizes the aircraft. Air Force data systems show the following uses of the C-131 aircraft during fiscal years 1984 and 1985.

Table 1: Uses of Guard C-131 Aircraft

Use	Percentage of use	
	FY 1984	FY 1985
Personnel movements	59	58
Aircrew training and qualification	19	17
Moving material and supplies	6	7
Administrative flights	4	5
Other	12	13
	100	100

Air Force systems do not provide data on the amount of cargo and number of passengers. Furthermore, most units did not have records with this data. Eighteen units provided passenger information from the memory of the C-131 pilots or other officers for a "best estimate." The remaining eight units provided some documented information about the number of passengers. Even the number of passengers might not be a sound indicator of mission requirements, because passengers may be transported on a space available basis.

C-131 flights have supported a variety of Guard requirements such as training, military exercises, unit deployment, conferences, recruiting, and transporting small aircraft parts and test equipment. Also, some units have used the C-131 to transport such diverse groups as teachers, members of the Civil Air Patrol, media representatives, and the state's governor and staff. Although available information shows that Guard units use C-131s to transport personnel and some light cargo, the information is not adequate to evaluate whether alternative mixes (types and numbers) of aircraft could meet Guard requirements. It is also not adequate for determining whether providing operational support aircraft to individual Guard units is the most appropriate means to meet operational support needs.

Six units recently received C-12F aircraft to replace their C-131s. We asked unit officials about the impact when the C-131 was replaced. Officials of four units stated there had been no severe effects caused by having the smaller C-12F. In fact, one official stated that aircraft's size determines the number of passengers taken on a mission. An official in one of the remaining units said the unit was severely affected because of the smaller payload but the unit was satisfied with the C-12F because of its advanced avionics and increased reliability and airspeed. An official in the last unit stated that the aircraft change had been too recent to determine the impact.

Evaluation of Cost Studies

The Senate Appropriations Committee Report on the 1985 DOD Appropriations bill directed DOD to study the cost effectiveness of changing the Guard support aircraft. DOD selected and evaluated the following four alternative aircraft mixes and submitted the results on April 3, 1985.

Table 2: Alternative Aircraft Mixes Evaluated by DOD

	Number of aircraft			
Aircraft type	**ALT. 1**	**ALT. 2**	**ALT. 3**	**ALT. 4**
C-12F	6	•	12	•
C-12J	12	•	•	•
C-130A	14	1	14	14
C-131 (modified)	•	31	•	•
Total	**32**	**32**	**26**	**14**

The present value cost of these alternatives for fiscal years 1984 to 1998 ranged from $175.8 million for alternative 4 to $213.1 million for alternative 2. Summary comparisons of the DOD alternatives are in appendix IV.

Cost Factors

Most of the values used in DOD's cost study were supportable. We noted some procurement/modification costs and operating and support costs which were questionable.

(1) Modification cost of $1 million per aircraft was included for only 9 of the 14 C-130As used in three of the alternatives.

(2) The study used estimates for the modified C-131 operational and support cost instead of cost data available from the Navy for modified C-131s.

(3) Fuel costs and consumption rates used for the modified C-131 and the C-12J were not based on best available data.

Factoring in changes to correct the above amounts did not cause a major change in the total costs or change the relative ranking of the total cost estimates of the alternatives.

The study did not consider residual values (the commercial value of a C-130, C-131, or C-12 in 1998) and market value of freed assets (the current commercial value of a C-130 or C-131) in determining total costs

of alternatives. Although estimating residual and market values can be difficult, a complete analysis should include such values.

Economic Assumptions

DOD followed the discounting procedure specified in the Office of Management and Budget (OMB) Circular A-94. That procedure presents all future year costs in constant dollars and then discounts the costs using a 10-percent annual rate. OMB is in the process of revising its procedure to specify a method of discounting more similar to that which we used, as described below.

The method of discounting we used expresses all costs in current dollars; that is, the estimated cost in the year the cost is to be incurred. To convert DOD's constant dollar estimates to current dollars, we used the estimated future years' inflation rates listed in the National Defense Budget Estimates for FY 86 issued by DOD in March 1985. We then converted the annual current dollar estimates to their present discounted value using a 9-percent discount rate, which was the average of U.S. Treasury Bond rates for bonds maturing between 1986 and 1998 quoted on November 8, 1985.

Using current (inflated) dollars and a 9-percent discount rate results in a considerable increase (24 percent) in the total cost of all four alternatives compared with DOD's estimate. However, the relative ranking of the alternatives was not changed.

Analysis of Alternatives

The DOD study did not contain adequate criteria for (1) establishing the mixes of aircraft included in alternatives or (2) measuring effectiveness of the alternatives. Furthermore, a study conclusion that "competition should be explored as a possibility for any option to accomplish this program, including the option of performing the entire operation on contract," was not fully examined by DOD or included as an alternative in its analysis.

The only specific measures of effectiveness DOD used in selecting alternatives were the capacity to carry large size cargo and the capability to fly 10,976 hours per year, the approximate number of annual flying hours for the Guard's C-131 aircraft. Otherwise, the mix of aircraft for alternatives was established primarily using the types and numbers of aircraft proposed and/or available for the mission. The requirement for large size cargo-carrying capability established that C-130A or C-131 aircraft be in all DOD's alternatives. Although we found the Guard units

were primarily using the aircraft to transport passengers, the study did not address passenger capacity except to state that passenger capacity requirements vary with the mission.

DOD's study did not measure the effectiveness of the alternatives. The number of aircraft in the alternatives ranged from 14 to 32. The alternatives specifying 32 aircraft were apparently based on the number of aircraft currently assigned to the Guard. However, one alternative in the study is based on 14 C-130s meeting such requirements. This alternative would not provide an aircraft for every state that has one now. The study did not explain the differing numbers of aircraft or specify how many states require an aircraft.

Using DOD's cost data to calculate operating and support costs for each aircraft, the C-130A has the highest cost per flying hour. The smaller aircraft have lower costs per flying hour. The cost per passenger mile shows that the larger aircraft, C-131s and C-130As, are considerably less costly when used at full passenger capacity than the smaller C-12s. Appendix V shows comparative cost data, including flying hour costs; annual logistics and fuel costs; and the cost per passenger mile for the four aircraft types considered in DOD's cost study.

Evaluating aircraft mixes and the relative benefits of the proposed alternatives depends on mission needs and operational requirements. DOD's study is useful in (1) comparing the procurement and operating costs of selected mixes of aircraft and (2) determining operating and support costs of individual types of aircraft. However, because the study did not address relative benefits, it did not provide enough information for selecting a most cost-effective mix.

Planned Phase-Out of Remaining C-131s

The Air Force has begun and plans to continue to phase out C-131 aircraft used by the Guard. In the last months of 1985, six C-131s were replaced with C-12 aircraft. Air Force plans call for the remaining C-131s to be replaced with C-12J and C-130 aircraft by the end of fiscal year 1988. The Air Force issued a contract using fiscal year 1985 funds on March 4, 1986, for six C-12J aircraft. Fiscal year 1986 funds were authorized to procure an additional six C-12J aircraft. Other Guard units are to be assigned C-130A aircraft to replace their C-131s beginning in late 1986.

Air Force officials said that about 3 years would be required after program start to complete the modifications on the test aircraft. Program

start will not occur until later this year. Accordingly, the Air Force's current plan is that all C-131s, except those to be modified, will be phased out by the time modifications are complete. Thus, the Guard will have only three modified C-131s and these will be unique with respect to the other aircraft in the Air Force inventory.

Conclusions

If the Guard continues to use C-131 aircraft, the proposed re-engining and modification appear necessary to improve safety and reduce maintenance. The reported good condition of the basic airframe and the relatively low flying hours accumulated indicate that the Guard's C-131 aircraft would be candidates for re-engining and modification. A major inspection would appear to be appropriate prior to a final determination as to whether to proceed with modifying an aircraft.

However, the cost effectiveness of re-engining and modifying the Guard's C-131 aircraft or selecting a replacement aircraft is dependent on mission needs and operational requirements. Neither the Air Force nor individual Guard units have adequately defined these. Furthermore, while usage varies significantly by individual unit, records are inadequate for a cost-effectiveness determination. Of those aircraft being considered, the C-12F could be the most cost effective if a small aircraft would fulfill requirements. If large capacity is required, the C-130 could be the most cost effective.

The question of cost effectiveness includes not only the type of aircraft but also the number. Utilization in some states is now limited to a few hours per month. Limited utilization raises questions about the need for individual states to have operational support aircraft. The DOD study seemed to recognize this issue by including options with fewer than 32 aircraft.

Mission requirements and more reliable information on the use of Guard operational support aircraft is needed for an adequate basis to determine the mix of aircraft needed by the Guard. Consequently, the relative merits of the mixes of aircraft comprising the alternatives in DOD's cost-effectiveness analysis cannot be properly evaluated. However, unless DOD's plan to phase out the C-131 is revised, the modification of three C-131s as a test program does not appear to be warranted.

We did not obtain official DOD comments on this report. During our work we did discuss the facts in this report with DOD, Air Force, and Guard officials and considered their views in preparing this report.

We are sending copies of this report to the Chairmen, House Committee on Government Operations, Senate Committee on Governmental Affairs, and House and Senate Committees on Appropriations; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget.

Frank C. Conahan
Director

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Appendix I

Objectives, Scope, and Methodology

The Conference Report and a letter from the Chairman of the Senate Committee on Armed Services requested that we determine the feasibility and cost effectiveness of the proposed C-131 modification. Specifically, the Chairman asked us to evaluate the (1) status and condition of the C-131 fleet, (2) cost and performance data obtained from the reengining and modification of the first two aircraft, and (3) mission needs and operational requirements of both the Air Force and the Air National Guard with respect to C-131 aircraft and proposed alternative aircraft. While our work was to include an evaluation of the cost and performance of the modified C-131s, because the Air Force has not begun modifications of the aircraft, we evaluated the DOD cost-effectiveness study.

We reviewed documents and files pertaining to the condition, maintenance, and use of the C-131 aircraft assigned to the Guard units. We asked the Guard commanders to provide (1) information and related documentation on the condition of their aircraft, including the airframe and maintenance problems, and (2) data and supporting documentation on missions their C-131 aircraft performed for fiscal years 1984 and 1985. In addition, we interviewed officials at Guard units in Ohio, South Carolina, Nevada, Washington, Arizona, California, Indiana, and Michigan.

To obtain additional views and data on the status and condition of the C-131 aircraft, we interviewed officials and examined documents at the Naval Aviation Logistics Center, Patuxent River, Maryland; San Antonio Air Logistics Center, San Antonio, Texas; Air National Guard Bureau, Andrews Air Force Base, Maryland; Beech Aircraft Corporation Arlington, Virginia; Allison Gas Turbine Division, Indianapolis, Indiana; and Hayes International Corporation, Dothan, Alabama.

We evaluated the report entitled Cost Effectiveness Analysis of National Guard Operational Support Aircraft Program by the DOD Cost Analysis Improvement Group. We verified the sources of their data and reworked the study using some different procurement and operating and support costs. We tested their economic and operational assumptions.

The views of officials were sought during our work and have been incorporated in this report where appropriate. However, as requested, we did not ask DOD for official written comments. We conducted our work in accordance with generally accepted auditing standards during the period October 1985 to February 1986.

Pictures and Specifications of Alternative Aircraft

Figure II.1: C-131 Aircraft

Specifications (Unmodified)	
Primary Function: Administrative	Cruise Speed: 200 m.p.h.
Prime Contractor: Convair Div., General Dynamics Corp.	Ceiling: Above 21,000 feet
Power Plant/Manufacturer: Two Pratt & Whitney R-2800-99Ws (piston)	Range: 1,660 miles
Horsepower: 2,500 hp. each	Load: 12,264 lb. cargo or 48 passengers
Dimensions: Span 105.3', length 74.8', height 27.4'	Crew: Two
	Maximum Takeoff Weight: 55,900 lb.
	Status: Operational
	First Aircraft Produced: March 1952

Specifications (Modified)	
Primary Function: Administrative	Cruise Speed: 357 m.p.h.
Prime Contractor: Convair Div., General Dynamics Corp.	Ceiling: Above 25,000 feet
Power Plant/Manufacturer: Two Allison T-56-A-15 turboprop	Range: Beyond 1,000 miles
Horsepower: 4,591 shaft hp. each	Load: 17,000 lb. cargo or 48 passengers
Dimensions: Span 105.3', length 74.8', height 27.4'	Crew: Two
	Maximum Takeoff Weight: 54,600 lb.
	Status: Proposed

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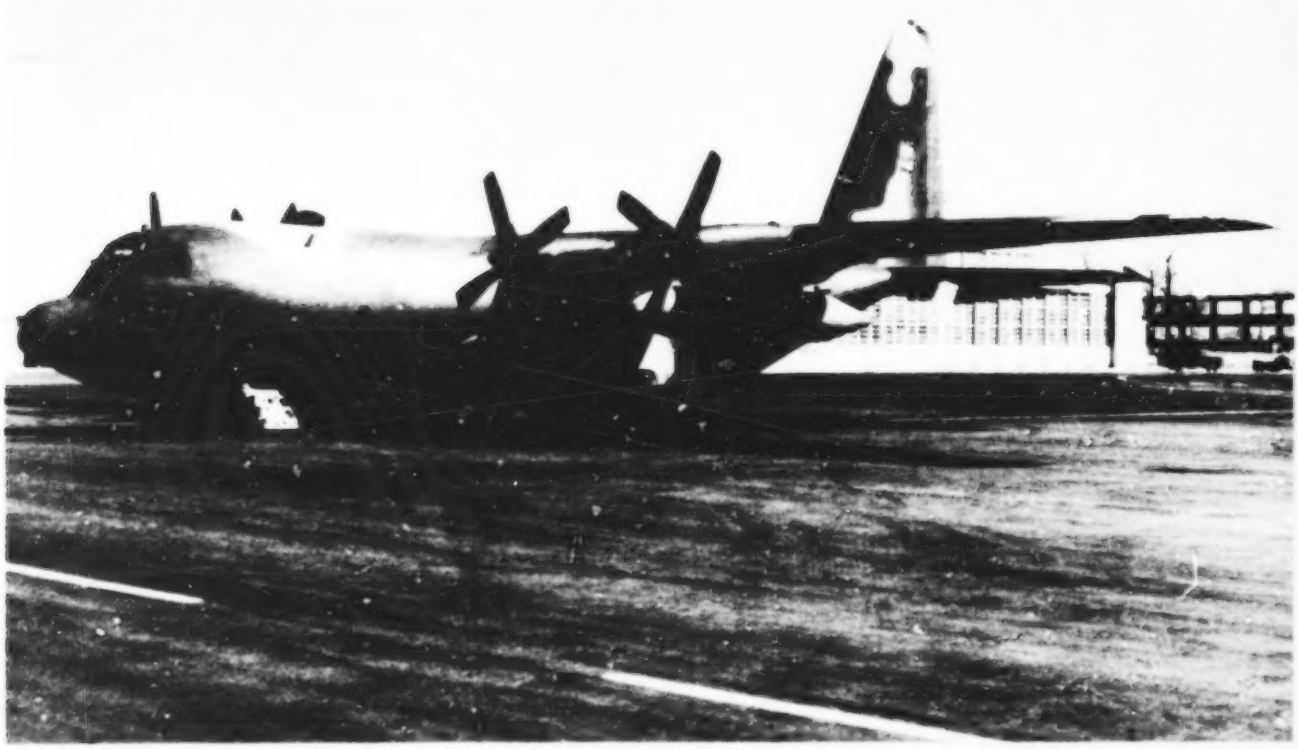
Figure II.2: C-130A Aircraft



Specifications

Primary Function: Intratheater tactical airlift
Prime Contractor: Lockhead Georgia Co
Power Plant/Manufacturer: Four Allison T 56-A-9 turboprop
Horsepower: 3,750 shaft hp each
Dimensions: Wingspan 132 6", length 97 8", height 38 5"
Cruise Speed: 320 m p h
Ceiling: 27,000 feet
Range: 2,249 miles
Load: 37,000 lb cargo or 92 passengers
Crew: Four
Maximum Takeoff Weight: 124,200 lb
Status: Operational
First Aircraft Produced: April 1955

Figure II.3: C-12F Aircraft

Specifications

Primary Function: Passenger and cargo airlift trainer
Prime Contractor: Beech Aircraft Corp.
Power Plant Manufacturer: Two Pratt and Whitney Aircraft of Canada PT6A-42 turboprop
Horsepower: 850 shaft hp each
Dimensions: Wingspan 54.6 ft; length 43.9 ft; height 15 ft
Cruise Speed: 333 m.p.h.
Ceiling: 35,000 feet
Range: 1,718 miles
Load: 2,647 lb. cargo or 8 passengers
Crew: Two (or pilot only)
Maximum Takeoff Weight: 12,500 lb.
Status: Production
First Aircraft Delivered: April 1984

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Figure II.4: C-12J Aircraft

Specifications

Primary Function: Passenger and cargo airlift trainer
Prime Contractor: Beech Aircraft Corp.
Power Plant/Manufacturer: Two Pratt and Whitney Aircraft of Canada PW PT6A-65B turboprop
Horsepower: 1,100 shaft hp. each
Dimensions: Wingspan 54'6", length 57'11", height 14'11"
Cruise Speed: 271 m.p.h.
Ceiling: 25,000 feet
Range: 1,246 miles
Load: 5,300 lb. cargo or 19 passengers
Crew: Two (or pilot only)
Maximum Takeoff Weight: 16,600 lb.
Status: Production has not started

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Flying Hours for Guard C-131s

State	FY 1984 Annual	FY 1984 Monthly average	FY 1985 Annual	FY 1985 Monthly average
Oregon	455	38	385	32
Indiana	450	36	452	38
Arizona	442	37	430	36
Kentucky[a]	425	35	442	37
Nevada	395	33	294	25
North Dakota	394	33	345	29
Idaho	378	32	420	35
Ohio	378	32	290	24
South Dakota[a]	368	31	386	32
Alabama	364	30	385	32
Kansas	360	30	319	27
Nebraska[a]	354	30	349	29
Michigan	349	29	319	27
Louisiana	345	29	432	36
Texas	335	28	270	23
Washington	330	28	353	29
Montana	320	27	388	33
Florida	315	26	346	29
Iowa	305	25	273	23
New Mexico	294	25	325	27
Missouri[a]	286	24	233	19
Colorado	285	24	302	25
Illinois	282	24	272	23
Arkansas	275	23	190	16
Connecticut[a]	266	22	244	20
Pennsylvania	250	21	253	21
Massachusetts[a]	244	20	191	16
California	200	17	179	15
New York	200	17	200	17
New Jersey	199	17	236	20
Wisconsin	193	16	280	23
South Carolina	185	15	224	19
Total	**10,221**	**27**	**10,007**	**26**

[a]C-131 aircraft replaced by C-12F between September and December 1985.

Results of DOD Analysis of Alternative Operational Support Aircraft

Dollars in Millions

	Alternative	Flight hours per year: Per aircraft	Flight hours per year: Total	Procurement cost	Operation and support 1984-1998	Total cost	Present value cost of total program[a]
1.	Air Force proposal						
	6 C-12F	443		$12.0	$29.9	**$41.9**	
	12 C-12J	343		44.4	54.1	**98.5**	
	14 C-130A	300		9.0[b]	151.7	**160.7**	
	C-131 (Phase-out)	343		•	38.9	**38.9**	
	Total		**10,976**	**$65.4**	**$274.6**	**$340.0**	**$210.3**
2.	Rework C-131						
	31 C-131	343		$124.0	$204.1	**$328.1**	
	1 C-130A	343		1.0	13.5	**14.5**	
	Total		**10,976**	**$125.0**	**$217.6**	**$342.6**	**$213.1**
3.	Two aircraft program						
	12 C-12F	443		$24.0	$57.5	**$81.5**	
	14 C-130A	404		9.0[b]	177.3	**186.3**	
	C-131 (Phase-out)	343		•	37.1	**37.1**	
	Total		**10,976**	**$33.0**	**$271.9**	**$304.9**	**$181.6**
4.	C-130A program						
	14 C-130A	784		$9.0[b]	$267.0	**$276.0**	
	C-131 (Phase-out)	343		•	42.4	**42.4**	
	Total		**10,976**	**$9.0**	**$309.4**	**$318.4**	**$175.8**

[a]FY 1984 dollars discounted at 10 percent

[b]Depot rework cost is $1 million per aircraft. Rework on five C-130As will be completed regardless of planned transfer to the Air National Guard.

Aircraft Comparative Cost Data[a]

Aircraft	No. of passenger seats	Cruise speed (mph)	Modification/ procurement cost (million)	Annual logistics and fuel cost[b]	Cost per flying hour	Cost per passenger mile[c]
C-12F	8	333	$2.0	$144,060	$420	$0.16
C-12J	19	271	3.7	180,075	525	.10
C-131 (modified)	48[d]	357	4.0[e]	238,042	694	.04
C-130A	92	320	1.0	597,506	1,742	.06

[a]Cost data is from DOD's study.

[b]Personnel costs for maintaining and operating the aircraft are not included. DOD does not include these costs in calculating a flying hour cost. Annual cost is calculated on 343 flying hours per aircraft, the average hours flown in prior years.

[c]Assumes each aircraft is operated at full seating capacity. Cruise speed and cost per passenger mile may vary depending on altitude, atmospheric conditions, cargo weight, and fuel levels.

[d]The number of seats on a C-131 varies due to different interior configurations.

[e]Estimate from Allison Gas Turbine Division based on re-engining and modifying five C-131 aircraft. Cost could be greater if fewer aircraft are modified.

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